



Biological and Age-Related Characteristics of the Development of General and Special Endurance in Schoolchildren of Different Ages

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Abstract: *the article, the formation of all basic abilities occurs during the child's education at school. Any movement of a person is the result of the coordinated activity of the central nervous system and the peripheral parts of the motor apparatus, in particular. Nervous-muscular system. During exercise, the human body and its individual joints move in space and time.*

Keywords: *School, student, biological, nerve, muscle, physical exercise, strength, speed, endurance, dexterity, flexibility.*

All-round development of the student, his high moral and cultural level, all-round volitional qualities, harmonious development of physical qualities (strength, speed, endurance, flexibility and dexterity), perfect functioning of cardiovascular, respiratory and other body systems, ability to master movements and their good coordination, physical fitness in general - this is the basis that every person should have to a greater or lesser extent. It is known that every person has certain movement abilities from birth. Physical (movement) qualities are usually called special aspects of the capabilities of this tool. Years of research have allowed us to identify a number of basic physical qualities: strength, speed, endurance, agility and flexibility. These qualities are the leading (or main) in the training of athletes in all sports. And such qualities as the ability to jump and others. comes together, that is. do not appear independently, but only in relation to each other, contributing to their fuller disclosure. At the same time, the optimal ratio of these qualities is important in the process of physical education.

The formation of all these basic abilities takes place during the child's education at school. Any movement of a person is the result of the coordinated activity of the central nervous system and the peripheral parts of the motor apparatus, in particular. Nervous-muscular system. During exercise, the human body and its individual joints move in space and time. If there is no muscle movement, no exercise is done. Currently, physical culture teachers pay great attention to solving important current issues of schoolchildren's physical culture. The program of physical education is being improved in terms of the volume and content of physical activity of schoolchildren in the mode of day, week, month, year: specific methods of realizing the connection of physical education with mental, moral, work and aesthetics. education is determined by the development of social activity and amateur activities in physical education and sports. (A.A. Markosyan) believes that during this period the growth and development of children does not occur evenly. Especially with the onset of puberty, rapid morphological and functional changes occur in all body systems. Endurance has a special place among the main motor qualities that determine the comprehensive development of a person, it is the main factor that ensures the health indicator, functional capabilities of the body and work performance. The physical quality of endurance should be understood as the ability of a person to ensure long-term performance of any activity without reducing its effectiveness. In this case, it is the ability to withstand physical fatigue during muscle activity. According to the classification of Professor V. I. Lyakh. Endurance: divided into speed, power, local, regional and global, static and dynamic, cardiovascular and muscular, as well as general and special, emotional, game, distance, coordination, jumping, etc. Therefore, the quality



of endurance is more complex in its structure, measurement methods and training methods compared to motor skills such as speed, strength, flexibility. General resistance is claimed under the influence of genetic factors ($K = 0.4$ to 0.8). The genetic factor has a significant impact on the development of the body's anaerobic capacity. High coefficients of heritability ($0.62 - 0.75$) were found in statistical resistance; For dynamic strength endurance, the effects of heredity and environment are about the same. Hereditary factors in boys and men have the greatest influence on the performance of average strength. Special exercises and living conditions significantly affect the growth of endurance. In those who participate in various sports, the endurance of the quality of this tool significantly (sometimes 2 times or more) exceeds the similar results of non-participants. Endurance development occurs from preschool to 30 years of age (and loads of moderate intensity and above). The most intensive growth is observed from 14 to 20 years. Dubrovsky V.I. shows that the growth and development of the body of schoolchildren is significantly influenced by physical activity, nutrition, and hardening. It is important to determine the levels of development of resilience in schoolchildren of different ages, to establish experimentally the effective means and methods of training this quality, to determine the permissible educational loads in classes. When affecting the body, in order to develop any qualities, it is necessary to alternate different types of activities in order to maintain a high level of performance.

Physiologists clearly explain the positive effect mechanism of alternating different types of activity and rest. In certain parts of the brain, functional exhaustion of nerve cells occurs under the influence of long and intensive work. During the change of activity, new areas of the cortex are stimulated, and the activity of the previous ones is aggravated, which leads to their rapid recovery. The endurance of 13-14-year-old teenagers is about 50-70% of the endurance of adults. At this age, the natural rate of development of endurance in girls may decrease. In school-aged boys, this quality is more developed than in girls. However, muscle endurance reaches its peak in men only at the age of 28-30. Maintaining high performance in young men largely depends on the efficiency of the body's aerobic energy supply systems and is described by the term "general endurance". This quality of life is the most important component of endurance training, especially in cycle sports. Compared with endurance, which reflects the duration of work until failure, performance more fully characterizes the volume and strength of work when performing loads in different directions. The study of the age dynamics of these indicators among schoolchildren showed that the volume of work performed in the period from 6-8 to 15-16 years is greater (70% of the maximum) and especially the average (50% of the maximum) power.

In addition, the volume and intensity of boys' work is higher than that of girls, especially from the age of 13-14. It is also interesting to note that the increase in physical performance during all loads in boys continues until adolescence, and in girls it is observed only during aerobic work. From the age of 13-14, under the loads of anaerobic and anaerobic-aerobic direction, the performance of girls does not increase, in many it even decreases. Studies have shown that the greater the load (running speed), the more endurance in the corresponding zone can be noted depending on age, and the speeds that 13-14-year-old children can withstand for 20, 30, 50 seconds. usually not available for children under 9 years of age. But vegetative functions are a little behind in their development. In children, oxygen consumption per kilogram of weight reaches the level of adults only at the age of 14-15 years. They have less hemoglobin per kilogram of weight. In youth, the heart works more often, and its contraction force lags behind the growth rate of the body. Therefore, the child's heart works hard. From here it becomes clear why the quality of endurance should be developed from the 5th grade. When using exercises, it is necessary to distinguish whether they are aimed at developing general and special endurance. Resistance to loads of submaximal intensity has its own age dynamics.

The endurance index changes little between the ages of 7 and 11, but with the onset of the maturation process, it increases sharply and only briefly remains at the same level at the age of 14.



What stands out in this series is static durability. Although this movement ability has been studied in sufficient detail pedagogically, the physiological mechanisms of its manifestation are still not well understood. Problem solving is important to develop speed, strength, and coordination-motor endurance. Solving them means achieving versatile and harmonious development of motor skills. It is also important to achieve the highest level of development of types and types of endurance, which play a particularly important role in the sport chosen as the subject of the sports discipline. Age characteristics of schoolchildren of different ages

Junior school age. The educational activity of a junior high school student "makes completely new demands on him compared to the game activity", which is the leader of the preschool age. The student will need some degree of "preparation and engagement in learning activities".

1) Primary school age - the period from 7 to 11 years old. The child still has the qualities of a preschooler, for example: mobility, spontaneity, impulsivity, instability of attention, general lack of will, as well as a clear manifestation of typological personality traits in behavior. However, the educational process requires the student to have an orderly external behavior in order to better absorb his knowledge. Therefore, the readiness of the child for school is not only the social situation of development in his life, i.e.: "organized autonomy, responsibility for discipline, readiness for changes in order to develop actions related to mastering. learning abilities, as well as for mental development ", as well as changes in personal mental qualities: motives, attitudes, values, desire to learn new things, mental abilities, etc. Preparation for school plays an important role in the life of a child at the initial stage of the school period. For this, there are methods of diagnosing children at school entrance, which help teachers in the pedagogical process to accept the child, taking into account his readiness and mental characteristics. These are phonemic listening tests used on six-year-old children, copying nonsense syllables, vocabulary test; more complex tests of short-term memory and inference. All of them allow you to record the following indicators: 2) 1) "the child's intellectual ability (initiative and

3) perseverance in mental activity);

4) 2) the ability to self-manage educational activities (awareness of the goal,

5) the ability to plan actions to achieve goals, monitor results, pay attention to the model);

6) the ability to store small pieces of information necessary for the performance of the task, the teacher's instructions in memory (short-term memory);

5) vocabulary development and phonemic perception (listening) ability.

In addition to being ready to study at school, it is necessary to talk about the young characteristics of this age period.

The physical aspect of the development of a child of primary school age focuses on the fact that the body is still in the process of development. His not yet fully formed skeleton, for example, does not allow him to sit in one place for a long time. Therefore, it is important to consider the "appropriate work order" in the educational process.

It shows that children of 7-8 years "quickly reach the limit of working capacity, they are resistant to nervous stress to a very small degree, they resist various noises, they are very excited, impressionable, emotional, they move from one activity to another with difficulty, slowly, due to lack of time do not tolerate situations. Differences in children's behavior may also depend on the type of nervous system: children with a weak type of nervous system are characterized by slowness or "increased fatigue can be expressed by increased fatigue. child."

Let's also consider the motivational aspect of the development of the personality of a junior high school student. Since "the child does not always know the reasons that motivate him to read



diligently and show interest in learning", significant disruptions in the process of mastering the school curriculum can occur, the child is not interested and he can soon fall behind the program, which can increase his further interest. For such children, it becomes difficult to set and set goals related to learning. After all, "the child's desire is the main engine of his successful learning." A younger student differs in many ways from a preschooler, who is already completely dependent on his life at home or in kindergarten. As mentioned above, the leading activity of a preschool child is play. However, a child who has just gone to school changes his attitude to the situation in which he is placed, not only due to the educational process, but also due to various neoplasms in his psyche.

The next important stage in the age-related mental development of modern schoolchildren is adolescence or early youth. This transition period is very important both for the teenagers themselves and for the environment. Here we are no longer dealing with a reliable and more or less balanced child, but with a 12-16-year-old boy with a clear expression of many neoplasms of the psyche that affect his behavior. - Adolescents are impulsive, they are more attracted and interested in external appearance than internal content.

However, according to the description of the age characteristics of the American psychologist A. Gezel, a 13-year-old child is distinguished from a child by tendencies towards introversion (turning inward), self-criticism, sensitivity to criticism, critical attitude towards parents. , and being selective in friendship. A 14-year-old teenager is already energetic, outgoing, self-confident. He is more interested in other people. He likes to discuss himself and compare himself with heroes. 15-year-old schoolchildren are distinguished by their desire to "master" individual differences, which often manifests in the form of a spirit of independence, freedom from external control, characteristic of teenagers. However, despite the external discomfort around such children, it should not be forgotten that these demonstrations are a signal for adults to start conscious self-discipline. Teenagers aged 16-29 are significantly different in their balance, emotional balance, cheerfulness, cheerfulness and a desire for more open independence. At this age, when reactions to various situations are manifested ("stubbornness, indifference to the assessment of success, leaving school because the main thing for the child happens outside school"), they face difficulties in relationships with schoolchildren. adults. They try to find a friend who understands them. This search for mutual understanding is directed more at peers than at adults. As a result, the central neoplasm of the teenager appears - "the feeling of adulthood" - "the emergence of the idea of a teenager as an adult, not a child." In addition to personal characteristics, the following factors contribute to the emergence of a central neoplasm in the psyche of a teenager: puberty, "the presence of basic knowledge, skills and abilities that allow them to act independently in various social situations." This period is characterized by its difficulties, for example:

1. "The development of self-awareness, the formation of self-esteem - an immature person.
2. Intensive character formation - character accents.
3. Feeling of adulthood - emancipation reactions.
4. The need for self-affirmation - pathological hobbies and hobbies - reactions.
1. The need for activity and socially significant activity - compensatory reactions for hypercompensation
2. Critical thinking - reactions of negativism and rejection.
8. Curiosity and thirst for self-examination - escape, wanderlust,



Increased emotionality, affective behavior, acute antisocial behavior. sensitivity to failure, aggressiveness.

All considered characteristics of adolescence can have a significant impact on the educational process. But in every feature of the child's psyche, which is not yet fully formed, one can also see the possibilities of further development and growth of the student's personality at the transition age.

High school age. High school students are often referred to as teenagers. "Adolescence is a stage of self-awareness and formation of one's worldview, a stage of responsible decision-making, a stage of human closeness where the values of friendship, love, closeness can be prioritized."

The difference between leading activity in senior school age and earlier age periods is in educational and professional activities. This is because "schoolchildren fall into a new social situation of development related to the choice of a future profession." A study of this moment in the lives of schoolchildren aged 12-16 gave the result that "the problems of the future are most strongly recognized and experienced by them." Such experiences are manifested in family, school, and relationships with peers. Especially if the socio-economic situation is unstable, or if the relationship between teachers and students develops as a boss-subordinate in the school. As a result, the pedagogic situation can be tense, and as a result, there can be less effective "fruits" of the educational process.

High school students "create a new kind of reflection that covers not only the present, but also the future ... consider themselves equal to adults, think about the future and build "life plans", aiming to change adult society. , create their own theories and systems", and also strongly feel the need to confirm themselves, they seek to be with not only their peers, but already like-minded people, "people who share their interests and outlook on life". The priority of looking to the future encourages high school students to pursue values-oriented activities, autonomy, and the right to be themselves. "The most important psychological process of adolescence is self-awareness and the formation of a stable image of the individual, "I". The considered moments and characteristics of senior school age are significantly different from junior school students and teenagers in the whole list of neoplasms and developmental aspects of the psyche. Scientists found that the norm of physical activity of schoolchildren is 18-25 thousand steps or 3.5-4.5 hours of walking during the day. In summer, 13-14-year-old children have 12 to 16 thousand movements per day in free mode. The natural daily activity of girls is 16-30% lower than that of boys. Girls show physical activity less spontaneously and need a greater share of organized forms in physical education classes. During the training period, the activity of schoolchildren not only does not increase during the transition from class to class, but, on the contrary, gradually decreases. For this reason, it is very important to provide adequate daily physical activity that is appropriate for children's age and health. Scientists have determined how much physical activity should be given to children per day when performing various types of physical exercises.

References

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